Journal of Education and Practice
ISSN 2222-1735 (Paper) ISSN 2222-288X (Online)
Vol.5, No.6, 2014

Blended Learning Barriers: An Investigation, Exposition and Solutions

Mohamed Sayed[1] and Faris Baker[2]
1. Arab Open University, Faculty of Computer Studies
(On Leave from Alexandria University, Faculty of Engineering) , P.O. Box 830 Ardiya 92400, Kuwait,
msayed@aou.edu.kw
2. Arab Open University, Faculty of Computer Studies, P.O. Box 830 Ardiya 92400, Kuwait,
fbaker@aou.edu.kw

Abstract
As we move toward knowledge society, it is important that we persist to identify successful models of learning at the institutional, program, course and activity levels. This endeavor will require understanding and capitalizing on the opportunities available in both face-to-face and computer mediated or distributed learning environments. This paper expounds blended learning as well as explaining where it is useful and why it is important. In practice there are different barriers to blended learning. In the present study we provide an overview of barriers of e-learning, which represents the substantial side of blended learning, and demonstrate how to cope with these barriers.
Keywords: Blended learning, e-learning barriers, information and communication technology, online learning.

1. Introduction

Education and technology are the dominant component of any economic development and stability as it increases levels of political and civic engagement, reduces welfare dependency, attracts businesses and promotes employments. To develop any economy there are two vital instruments to be utilized: human capital and physical capitals. Human capital needs educated and skilled workforce while physical capital requires infrastructure such as machinery, computers, buildings, and roads. In both cases excellent education is a prerequisite and the key factor for producing high quality products and services. Furthermore, education has shown to be even more important than natural resources as we observe countries such as Singapore with virtually no natural resources performs far better than countries with rich natural resources such as Iraq, Venezuela and Nigeria due to the high standard of its training and technology. A research study in Smith and Rademacker (1999) found a positive correlation between education and economic advancement.

Blended learning can be traced as a learning platform where more than one type of learning is being applied with the purpose of optimizing the learning outcomes and the cost of learning. It is worth noting that there are many schools of thought on learning, and no one of them is used exclusively to design blended learning materials. As there is no single learning theory to follow, we can employ a combination of theories to develop the material of blended learning. These existing learning theories, however, were developed before distributed and networked learning was applied widely. In fact we do not need a new stand-alone theory for blended learning, but a model that integrates the different theories to guide the design of blended learning materials.

Nevertheless, there are numerous barriers to blended learning. These barriers vary from absence of administrative support, to lack of students and tutors participation. Administration requires financial assets, and participation depends on motivation. Poor design of e-learning courses such as unattractive materials and deficiency in assessments can also contribute to the barriers (Al-adwan and Smedley, 2012; Rhema, and Miliszewska, 2010). In addition, an appropriate hardware infrastructure should be set before using blended learning. The infrastructure should have proper bandwidth, servers, storages and minimum downtime.

The paper begins by going through the definition, philosophy and advantage of blended learning. Then, it focuses on using technology in blended learning. Next, it outlines barriers concerned the e-learning component of blended learning.

2. Blended learning approach

Blended learning is a way of teaching and learning which integrates e-learning with traditional learning under a unified form. The e-learning tools such as software, computer facilities and the internet are merged with regular tutorials in which tutors meet with learners face to face most often. Face to face is a traditional synchronous method of learning while e-learning uses technology to provide synchronous and asynchronous instruction. So, the term blended learning refers to the educational environment by which integrate and employ innovative technology with classroom learning, taking into account the dimensions that create better education. It is impossible to ignore the prevailing educational techniques and the utilization of existing advanced technology.

Moreover, Blended learning provides opportunities for both self and cooperative learning hence integrates all of these with the active-learning which is based on new technologies. Blended learning also gives a good

opportunity to experience different cultures, directs the learner towards research and survey, provides feedback on time, and simulates the direct communication with the tutors. Blended learning also does not come with a fixed daily routine, but it overcomes the phenomenon of boredom experienced by learners. It works to sustain the motivation to learn which creates a state of satisfaction and acceptance to the learners.

In addition, blended learning is an imperative method and gradually prominent for educating the masses. It is apparent across educational sectors including higher education, training environments and government settings. Blended learning uses traditional classroom and the internet to provide affordable, time flexible, geographically convenient, and accessibility for all. It is affordable because it utilizes fewer resources such as tutor time and commuting costs for students. It is open for all, because all ages anywhere and anytime can use the net to find out about learning. It improves the quality of education because it increases interactivity between the students, and the students with their studies. Students can use technology to aid them grasping all dimensions of knowledge.

3. Blended learning and technology

The philosophical system of blended learning based on maximizing the use of the information technology applications in the design of novel learning situations that combine classroom instruction and e-learning instruction. Information technology can be used to increase the accumulation of information, concepts and skills associated with the studied subjects and to assist learners and tutors to cope with the nature of the new digital revolution. In addition, the information technology may be used to work on the compatibility between various inflated and renewed information in different branches of cognitive life. Moreover, it gives learners the fun and excitement, and makes the learning more active. Its contributions effectively appear in transforming difficult subjects into simple, incremental learning.

E-learning is an essential component of blended learning and has many advantages over traditional classroom instructions. It provides electronic educational materials as well as a platform for discussion and interaction among students and tutors. E-learning can give instant feedback and captures statistical results of user engagement to assess performance and enhance the learning experience. Students can use the forums to talk about any issue that they wish to pursue. Forum offer peer to peer review moderated by a tutor as well as a platform for social interaction and improving communication skills. E-learning reduces face with face class time to give more reflection and study time for students and more research time for tutors. Commuting time to the university consequently is reduced and also energy consumption and traffic jam. Furthermore, students who live far away from the university now can have better opportunities to learn and participate in the education process. Additionally, e-learning encourages students to be independent and utilize technology. The cost of learning becomes less because a tutor with the assistance of technology can monitor many students. Besides, e-learning ease intercultural communication gap between people because it can cross geographical borders to make a planetary community. Students who are shy to take part in classroom discussion for any reason such as lacking the skills to speak in public or feel constrained by time can easily place their questions and opinions in their forums at their own pace.

E-learning increases the student's involvement with the course because technology eases the communication between individuals or groups as well as enabling access to the world wide web of knowledge. Moreover, e-Learning courses can be visualized in a customized way that suits all sorts of students in their journey to knowledge. These courses are repeatable, containing quizzes, including both synchronous and asynchronous forums. They also contain instant feedbacks, chats, and emails which are monitored by specialists and accessible at convenient times. Active involvement of students in the learning process is important and improves the students' grades and performance. Prior studies, see for example Ahn et al. (2013), showed that learners who are active in their knowledge inquiries have better grades than learners who are receptive only.

The reader who would like to learn more about blended learning and the available technologies is referred to Chen and Jones (2007), Fetch (2006), Graff (2003), Matthew et al. (2010), and So and Bonk (2010).

4. Barriers and solutions for blended learning

In this section we will discuss barriers concerned with only e-learning component of blended learning and drop the face-to-face difficulties. We will also demonstrate how to overcome these e-learning barriers.

4.1 Lack of infrastructure

Learning through technology demands reliable hardware, easy to use software and high bandwidth network connection, in addition to skillful, trained staff that supports the users and maintain the system. To make the system simple to use for the students and tutors, workshops must be conducted regularly and at convenient times for both students and tutors. In e-learning, large data are processed between students, tutors and the servers which necessitate high performance databases and large backup storage. Preserving the integrity and the surety of the transactions requires authentication of users, reliable and secure connections.

To circumvent these issues of concern, allocating sufficient financial funds is crucial and a primer for this platform. Financial investments in this platform will reap the benefits of ubiquitous education and long term economical values. Bearing in mind as technological advances become more widespread, internet bandwidth, reliable and accessible hardware, skillful workforce and support becomes less of an issue.

4.2 Fear of technology and shortage of engagement

It is normal to have a fear of the unknown and resist changes. But once the individual becomes familiar with the new technology and recognizes the enormous benefits, this issue becomes immaterial. E-learning makes the learning curve steeper by increasing student engagement, and capturing student interests. Interaction between students and their peers as well as between tutors and students increases due to the available tools of forums, emails, chats, wikis, blogs, video conferencing, YouTube, e-portfolios and e-quizzes. Data gathered from users' interactions can be transformed into informative information about user level, interests and needs. For instance, the number of times a student participates in the forum by asking a question or answering a question would indicate participation. Peer reviews and interactions with this participation would also signify the importance of the issue. On the other hand, customized e-quizzes teach and assess the student according to his/her abilities; an incremental learning method that provides challenging questions yet within student reaches. When a student feels ready for the topic, he/she can take the quiz on his/her convenient time. As the student progress in the course, the difficulty level of the questions changes accordingly.

It is therefore essential to provide extensive education and training in the use of the new technology. Proceeding training there should be continuous support for issue arises as well as any inquiries or updates. Furthermore, it is necessary to promote engagement by actively informing all registered students in the course of any questions, discussions, comments occurring online pertained to the topics of the course by email or mobile messages. Wilson (2004) asserts the activities of the learner determine the learning outcome more than the instructional strategy, in addition explains about useful instructional design. Without after implementation support and student engagement this project will fall short and will lead to disentanglement.

4.3 E-learning apathy

In the beginning there might be some apathy toward implementing e-learning which is the result of various causes. Upper Management could be unaware of the benefits of e-learning and therefore reluctant to invest in this project. Tutors may be skeptical about the outcome of e-learning and prefer to teach in traditional methods. Students may be unmotivated or unfamiliar with the role of technology.

It is important to explain in details the benefits of e-learning in the upper management, to the teaching community and to the learning community to ensure the active participation of all stakeholders. This can be achieved by workshops and experimental pilot project involving interested individuals at the first stage, supported by previous research and analysis results. Equally important the evidence elicited from other institution's success in this area will be a supportive argument and a great inspiration. When the pilot project shows promising results, and when other institutions confirm the same outcome, the e-learning methods successes will become obvious and easy to conceive.

4.4 Assessment difficulties

With e-learning, there will be a huge number of students registered in many classes. Manual assessment with pen and paper for a large number of students causes difficulties for tutors. Introducing electronic assessment saves tutors time, reduces manual errors, and provides immediate feedback. Moreover, e-assessment offers opportunities for interactive and customized experience as well as an immediate feedback. Adding objects, animations and multimedia embedded in the e-assessment enhances the learning experience. Examples of assessment software are available in Moodle, Adobe Activate, TCExam, and iSpring. On the other hand, concerns about assessment security, confidentiality, reliability, and implementation requirements may impede this progress.

To overcome confidentiality and reliability issues, conducting midterm or final exam electronically requires special assessment devices that are reliable and security enabled. These devices can be common mobile devices such as laptops, tab devices or special devices such as student response devices. These devices can be disseminated to the students when they register for any program of learning or given at exam time. Students connect to the internet and the appraisal server at the time of the exam. The server verifies each student identity, and start the exam. Laptops and tab devices can be cost effective and useful for other purposes such as delivering learning materials in digital forms rather than traditional printed materials. To investigate the issues of security and accessibility in details, a pilot test on a small scale would be beneficial before a large scale implementation. Apampa et al. (2010) and Marais et al. (2006) discuss more issues with e-assessment securities.

4.5 Tedious student advising and course scheduling

In blended learning, huge numbers of students require advising to select the correct courses for completing their degree requirement. These places constrain on tutors' time already occupied in preparing for the lectures, tutor marked assignments as well as midterms and final exams. Offering courses at the right time for all students and tutors also another challenging task.

An automated advising and scheduling system would relief the tutors from many advising difficulties, and bring forth a timetable more suitable for both tutors and students. The system will check the prerequisite for each course and allow a student to register for a class only if he/she satisfies the requirements. An automated advising and scheduling system will look at each student portfolio and perform analysis to come up with the best timetable.

4.6 Incongruous e-learning courseware

E-learning has to be integrated into within students learning experience. A student needs to understand the materials relevant to his/her experiences. For instance, if the subject matter is too difficult or too easy this can deter a student from continuing to learn.

Developing a learning analytics about student e-learning engagement and abilities is an important step in discovering a student learning level. It is more effective to increase learning and customize it according to individual capabilities than designing only one model that may deter many. Data analytics about student usage of e-learning will provide insights about student level and interests.

4.7 Poor language skills

Most of e-learning resources are in English and poor language skills in English and communication cause an obstacle to understanding and learning. Alkharang and Ghinea (2013) have studied this issue which is specially pertained to non-English speaking countries.

It is critical to provide extensive English language courses to the users because English nowadays is the language of science and technology; it is spoken worldwide, and is connecting the global populace. Without the English language skill, a heavy constrained will be placed on learning and a delay of progress is imminent.

4.8 Difficulties in developing concepts and thinking skills

A significant part of any learning theory is to develop the educational attainment, conceptual understanding and higher-order thinking skills, see Sayed (2013). Concepts misunderstanding could occur as a result of multiple of sources. It could also happen due to the method of instructions, the difficulty of the concepts or poor quality of learning materials. Moreover, the introduced subject might include a variety of concepts, different thinking, and applications which are not associated with the nature of the subject content.

To remedy these difficulties, virtual learning labs in the educational institutions should be activated. The modern styles and innovative technology drive learners to further inquiry, analysis, interpretation and criticism about the facts and concepts. Besides, it has to be strived to stimulate communication between learners with each other and their tutors through the internet. Also, the correction of misunderstanding patterns has to be regularly accomplished. In addition, tutors have to be prepared to employ information technology in the educational process in several ways customized to the student's abilities and needs. Training of tutors on e-learning through inclusion in a professional development program is imperative and has to be regularly monitored and perfected. On the other hand, students have to take responsibilities of their own learning by developing self-regulatory learning strategies. Zimmerman (1990; 2001) elaborates on self-regulatory learning and academic achievement.

4.9 Inadequate career planning and tutor industry link

Career planning is an important component of the learning process. It motivates students to pursue for their goals. It can be challenging for a student to determine exactly a career path and what he/she wants to do from a professional standpoint.

In order to determine a career path, the student first has to realize his/her self and raise questions about his/her interests, skills and abilities. Second the tutors need to maintain a link with the industry and the research community to inform the students about the opportunities available to the students and how the program of learning is relevant to their life histories. Third, the student needs to trust that they can achieve their goals. Without these three requirements, the student may despair and procrastinate which lead to delays in the learning process.

5. Conclusion

Information and Communication Technology (ICT) provides opportunities to transfer learning from instructor centered to student centered learning. These tools spread learning and consequently a new society will merge that are more developed, capable of competing and cooperating globally. Moreover, we are in a global educational world which counts on blended learning in many subjects and disciplines. A good example of blended learning is to give a structured introductory tutorial and then to provide follow up materials on line.

Additional research and pedagogical experimentations should be taken to obtain a deeper understanding of the factors influencing blended learning barriers. Our next objective is to focus on understanding of the several attitudes and opinions with regards to computer-literal participants opposed to people with a limited technology background. Moreover, the online delivery of instructions, perhaps on mobile devices, enables smooth progression from teaching resources to assessments and back again. Future work will focus on developing computer-marked assessment and e-assessment securities.

References

Ahn, J., Weng C. and Butler, B. (2013), "The Dynamics of Open, Peer-to-Peer Learning: What Factors Influence Participation in the P2P University", Proceedings of the 46th Annual Hawaii International Conference on System Sciences, 3098-3107.

Al-adwan, A. and Smedley, J. (2012), "Implementing E-Learning in the Jordanian Higher Education System: Factors Affecting Impact", International Journal of Education and Communication Technology, 8 (1), 121-135.

Alkharang, M. and Ghinea, G. (2013), "E-learning in Higher Educational Institutions in Kuwait: Experiences and Challenges", International Journal of Advanced Computer Science and Applications (IJACSA), 4 (4), 1-6.

Apampa, K. M., Wills, G. and Argles, D. (2010), "User Security Issues in Summative E-assessment Security", International Journal of Digital Society (IJDS), 1 (2), 1-13.

Chen, C. and Jones, K. (2007), "Blended Learning vs. Traditional Classroom Settings: Assessing Effectiveness and Student Perceptions in an MBA Accounting Course", Journal of Educators Online, 4 (1), 1-15.

Fetch, L. (2006), "A study of Blended Learning at Metropolitan Research University", DAI-A, 66 (10), 3615-3625.

Graff, M. (2003), "Individual Differences in Sense of Classroom Community in a blended Learning environment", Journal of Educational Media, 28 (2), 203-210.

Marais, E., Argles, D. and Von Solms, B. (2006), "Security Issues Specific to E-assessments", *8th Annual Conference on WWW Applications,* Bloemfontein*,* 06 Sep 2006, 8-18.

Matthew, K., McGuire, P., Kinzie, M.B., Lee, Y., & Foss, J. (2010), "A Blended-learning Approach to Professional Development in Pre-k Mathematics and Science: Lessons From My Teaching Partner", Reflection paper presentation at the annual meeting of the Association for Educational Communications and Technology (AECT), Anaheim, CA.

Rhema, A. and Miliszewska, I. (2010), "Towards E-Learning in Higher Education in Libya", Issues in Information Science and Information Technology, 7 (1), 423-437.

Sayed, M. (2013), "Blended Learning Environment: The Effectiveness in Developing Concepts and Thinking Skills", Journal of Education and Practice, 4 (25), 12-17.

Smith, K. and Rademacker, S. (1999), "Expensive Lessons: Education and the Political Economy of the American State", Political Research Quarterly, 52 (4), 709-727.

So, H.J and Bonk, C.J. (2010), "Examining the Roles of Blended Learning Approaches in Computer-Supported Collaborative Learning (CSCL) Environments: A Delphi Study", Education Technology & Society, 13 (3), 189-200.

Wilson, B. (2004), "Designing E-Learning Environments for Flexible Activity and Instruction", Educational Technology Research and Development, 52 (4), 77-84.

Zimmerman, B. J. (1990), "Self-Regulated Learning and Academic Achievement: An Overview", Education Psychologist, 25 (1), 3-17.

Zimmerman, B. J. (2001), "Theories of Self-Regulated Learning and Academic Achievement: An Overview and Analysis", In B. J. Zimmerman & D. H. Schunk (Eds), Self-regulated Learning and Academic Achievement: Theoretical Perspective, Mahwah, NJ: Erlbaum, 2nd ed., 1-37.